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tion Victims;" "The Gospel of Rest;" "The Legal Liability of Doctors;" "The Danger of Ignorant and Indiscreet Bathing;" "Bleaching the Hair;" "The Filtering of Drinking-Water;" "Liver-Spots;" "Typhoid-Fever on Long Island;" "Lotions for Freckles, for Red Hands, for keeping the Hands Soft and Smooth;" etc. There is also a very interesting article on "The Policeman as an Autocrat, and Clubbing and its Effects," by Capt. Gunner of the New York police.

— Mr. Gladstone has an article in the *Nineteenth Century* for July, entitled "Plain Speaking on the Irish Union." In it he says, "Sir Richard Webster, in examining William O'Brien before the Parnell Commission, implied that a grave charge would be proved against certain Irishmen if it could be shown that they regarded English power as alien. I should like to have asked Mr. O'Brien whether the Irish, so far as he knew, regarded the Act of Union as possessed of the same moral authority as the laws against theft and murder, or as possessed of moral authority at all. I do not doubt that Mr. O'Brien would have answered that they regarded it as an act of force to which Ireland was under, not a moral, but only

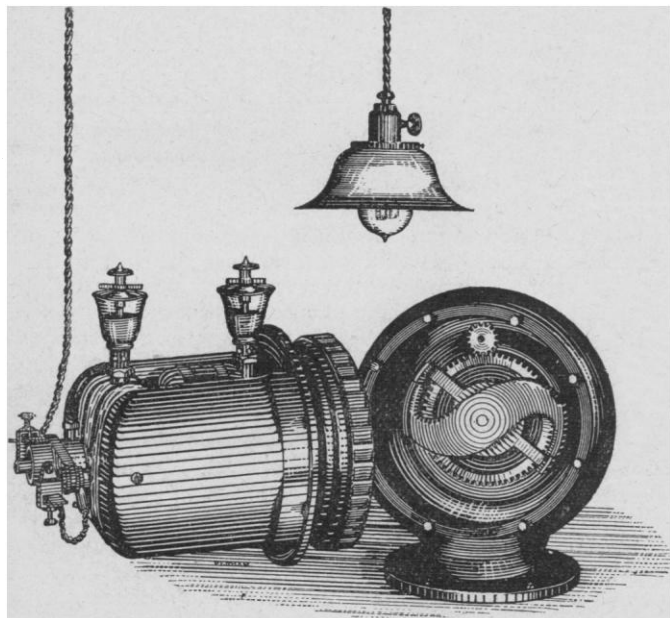
a prudential obligation to conform. There may be immorality in miscalculated resistance even to immoral laws, but such resistance is not in itself immoral. The question is, whether worship of the Act of Union is piety or superstition."

— Mr. George John Romanes, the distinguished author of "Mental Evolution in Man: Origin of Human Faculty," will contribute to *The Open Court* of July 11 (Chicago) an article entitled "The Psychic Life of Micro-Organisms." The public will recall M. Binet's able series of essays in Vol. II. of *The Open Court*, in which the soul-life of these tiny and interesting beings was so carefully discussed. The essays were afterwards published in book form by The Open Court Publishing Company. In a preface written especially for the American edition, M. Binet took issue with Mr. Romanes relative to the stage in animal development at which psychological powers first appear. The criticism has attracted much attention. The eminent English scientist, in turn, now replies to the strictures of the French *savant*. The controversy will be of interest to all. To those who have read M. Binet's monograph the reply of Mr. Romanes will be an appropriate supplement.

INDUSTRIAL NOTES.

A Combined Water-Motor and Dynamo.

A COMPACT combination of a water-motor with an electric generator, now being placed on the market by the Belknap Water Motor Company of Portland, Me., is shown in the accompanying illustration. It is intended for small plants of from ten to fifty or more 16-candle-power lamps. In the engraving the dynamo and



COMBINED WATER-MOTOR AND DYNAMO.

water-wheel are shown detached from the wheel-case and stand or base. The gear-wheel and pinion seen in the wheel-case operate the devices which control the flow of water to the wheel, thus governing the speed of the motor and dynamo. Water under the requisite pressure is admitted at the centre of the case, in the rear, passes through the curved arms shown in the case, whence it impinges upon the curved buckets of the wheel, at the inside, and escapes at the exterior of the wheel, passing away through the base of the motor casing. The wheel is an outward-flow turbine or vortex wheel, mounted on the same shaft as the armature, and may be run at a speed ranging from one thousand to three thousand revolutions a minute, according to the head of water available. Several of these novel electric-light plants are now in operation, and are said to give great satisfaction.

Aside from its use in connection with a dynamo, this motor, the "Little Giant," as it is called, is used for a variety of purposes, having been on the market some eight or ten years. In many towns and cities of the United States and Canada, where water at

a pressure of twenty-five or thirty pounds may be had at a reasonable price, these motors, ranging in size from seven to twelve inches in diameter, are successfully running printing-presses, lathes, saws, jewellers' and dental tools, organs, sewing-machines, and coffee, spice, and drug mills.

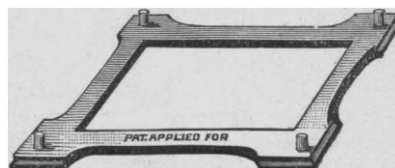
Graduated Glassware and Bohemian Beakers.

James W. Queen & Co., Philadelphia, have recently made arrangements for the manufacture of chemical glassware of fine quality, and call particular attention to the accuracy of their graduated ware, such as burettes, pipettes, volumetric flasks, cylinders, etc. These goods are made abroad, by experienced workmen, of the best German glass.

In order to satisfy themselves still further, as well as their customers, as to the quality of the apparatus, they selected at random a number of each of the articles mentioned above, and sent them to William H. Greene, professor of chemistry in the Philadelphia Central High School, asking him to submit them to a comparison with his "standard instruments," made by Geissler of Bonn. The results of these tests, as shown in a letter from Professor Greene, are highly satisfactory.

A Rubber Mat for Type-Writers.

A useful device, manufactured by the United Rubber Company of Trenton, N.J., is shown in the accompanying illustration. It is a rubber mat, to be placed under a type-writing machine for dead-



ening the clicking noise of the type, which, even in the best of type-writers, sometimes becomes annoying. The mat reduces the noise to a minimum, and is made in various sizes and styles to fit machines of different makes.

Notes on Electric Railways using Thomson-Houston System.

The popularity of electric railways is evidenced by the recent purchase of the Des Moines Broad Gauge Railway, equipped with the Thomson-Houston system, by a wealthy Chicago syndicate; the purchasing price being \$350,000, some three times the original cost of the road. When equipped with horses, this road did not pay operating expenses; but, since its equipment and operation under the Thomson-Houston system, its net earnings will pay 3 per cent dividends upon an investment of nearly \$400,000. The road has never had a repair-shop for its electrical apparatus; and in a recent conversation its president said that they did not know what electrical repairs meant, as they had had none to make. In some respects the Des Moines road has been the most wonderful

in results of any electrically equipped road; it having at its power-station but one 30-horse-power generator, which operates eight cars over grades running as high as 10 per cent without indications of overheating, and frequently tow-cars are used with those equipped with motors. On one branch of the system the necessity of speedy equipment compelled the use of a No. 2 copper wire without feeders, such wire being the only available material; yet, with this small conductor, the cars are run at a rate of six miles per hour up a 10-per-cent grade, three miles distant from the station.

The Omaha and Council Bluffs Railway and Bridge Company are progressing rapidly with the electrical equipment of the recently purchased horse-car lines in Council Bluffs. For the operation of such lines they have purchased ten additional motor-trucks and two generators from the Thomson-Houston Electric Company. In placing this order for additional apparatus, the management of the road state, in a letter to the Thomson-Houston Company, that

they consider their present line equipped with the Thomson-Houston system the most perfect electric railway in the world.

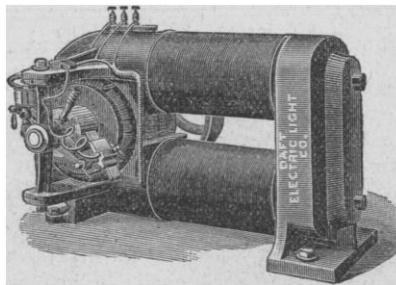
The Omaha Motor Railway Company is nearly ready to begin operations with the Thomson-Houston electric system. The largest power-station which has yet been constructed for electric-railway operation is owned by this company, and the car-equipment ranks second in quantity among electric railways yet constructed, it having twenty-six motor-cars, each of which will be used to tow at least one additional car, and many of the motor-cars will tow two additional cars. The success of the Thomson-Houston system on the Omaha and Council Bluffs line has made the citizens of Omaha jubilant at the immediate prospect of such rapid transit being given them over their entire city. In addition to the equipment ready to be put in, the company intends to add twenty additional motor-cars upon the extensions to its system within a few months.

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The Guaranty Investment Company makes loans upon fertile farms in the choicest portions of Kansas and Nebraska and has adopted the policy of sending a Committee of its Investors each year to examine its loans and methods of business.

The Committee this year consisted of PROF. A. H. BERLIN, Principal of the High School Montrose, Pa., and MAJ. THEODORE L. POOLE, Ex-U. S. Pension Agent, Syracuse, N. Y. Both of these gentlemen are persons of the highest character and have the confidence of the Communities in which they reside.

The Committee has recently returned and has made a very interesting Report upon the general development of Kansas and Nebraska as well as the business of the Company. The Company will be glad to send this Report to any address.

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